

In the Matter of GN Docket 12-91

Emergency Communications by Amateur Radio and Impediments to Amateur Radio Communications

COMMENTS OF

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I am the ARES Emergency Coordinator in Fairfax County, Virginia. We serve the local county Office of Emergency Management and the local hospitals actively. We would also help the American Red Cross if they asked. I have been licensed continuously since 1990. I currently hold an Extra class license but was also licensed as a Novice in the early 1970s. I have been actively volunteering as an amateur radio operator since 2001 as time permitted. Since retiring in 2007 this has been my primary avocation.

Below are my answers to the questions asked in this FCC issued DA 12-523 soliciting comments from the public on multiple questions. Below are my answers keyed to the questions asked.

Answers:

1a. During the 9/11/2001 terrorist event at the Pentagon, local Amateur Radio operators provided communications to the rescue works while the cell phones were overloaded. After cell phone service was restored Amateur Radio operators continued to provide communications support to the shelters that were supporting the rescue workers.

An example of severe weather where amateur radio provided important disaster communications in Fairfax County, Virginia, was during Hurricane Isabel in 2003. During this hurricane (probably down to tropical storm strength) Fairfax County activated Fairfax ARES amateur radio operators at the EOC and 7 shelters where the amateurs ended up providing the only communications from the shelters to the county EOC. Power was out during the storm and much of the week afterwards in many areas. Cell phones quit working during the night of the storm leaving shelters with only amateur radio communications. Hurricane Isabel was the costliest hurricane in the history of Virginia. Without

Amateur Radio communications the shelters would have been out of touch with the EOC and the Red Cross disaster operations center.

In addition Fairfax ARES has supported the local hospitals several times in the past 10 years when their phone systems failed or were required to be turned off for upgrades. In the latest event about 40 hams spread out across the hospital using UHF radios to ensure that internal hospital communications continued. Hams also provided a link to a nearby hospital where the inbound phone lines were redirected just in case the normal communications between the hospitals were to go down.

The benefits of the above support were communications when commercial circuits were down and back up or supplementary communications when other commercial communications were running.

1b. Under what circumstances does the Amateur Radio Service provide advantages over other communications systems in supporting emergency response or disaster relief activities?

The primary advantage of amateur radio communications over other communications is their resilient nature. Both due to individuals being able to select bands and modes that suit the conditions but also their low cost of use. Building fully redundant communication systems is not necessary when our served agencies can get help from amateur radio operators. This advantage is also seen in large public events where normal communications are overloaded yet amateur radio communications can still fill in the gap. An example is the Marine Corps Marathon where about 120 Amateur Radio operators are the "eyes and ears" of the US Navy medics during the event. In 2010 broadband cell networks were overloaded but ham radio FM voice, 9600 bps AX.25 packet and 128kbps D-STAR DD mode (tcp/ip bridge) communications networks continued to provide uninterrupted communications between the aid stations on the course, the medical operations center, and the runner medical tracking database through the complete race. The Marine Corps Marathon is also an example where amateur radio communications complement other communications, in this example the USMC E-LMR and cell phones for voice traffic.

1c. My understanding is that FEMA requires local state and local governments to consider Amateur Radio in their planning. Fairfax County has taken this to mean include Amateur radio as a backup.

Federal policies that prevented states and localities from undue restrictions on antennas would help. Some states, like Virginia, already make it clear that local governments much allow antenna structures

provided good engineering practice is used. Depending on high or low density the height limit either 120 ft or 75 ft.

State and local governments would factor Amateur Radio into their plans by first deciding how to manage the Amateur Radio operator teams then by bringing the leadership of those teams into the planning, inclusion into the EOC, providing a mechanism for credentialing, offering training to allow the Amateur Radio operators to fit into the EOC and the operations plan. And so on.

1d. Virginia and the County of Fairfax already include Amateur Radio into their plans, policies, and training programs.

The Amateur Radio Service would fit into state and local government plans and programs by first being including as plans are being written. This would allow the local Amateur Radio operators to brief the State and local government emergency managers on the Amateur Radio capability. Second by including the Amateur Radio Service into the yearly training and exercise program the other emergency officials would become aware of Amateur Radio capability and most important the fact that Amateur Radio can be a reliable partner.

1e. Subpart E, Providing Emergency Communications, is in good shape. This allows flexibility under disaster conditions or conditions where life and property is at stake. The RACES provisions provide our local county an option to obtain Amateur Radio operator support should the ARS be shut down during war or some massive terrorist event.

The most important enhancement to amateur radio emergency communication capabilities would be to modify Part 97, Subpart D, to remove of the restrictions that prohibit mixed mode contacts, i.e. by allowing the use of phone, data, and CW on one frequency. We have proven locally that mixed phone/image/data nets are very efficient at supporting the communications our after action review have shown necessary. My recommendation would be to allow data in the phone segment in the same channel bandwidth currently allowed for image and phone. This sort of regulation change in the past was complicated by other proposed rule changes that appear to be constructed to allow automatic stations, i.e. WinLink, anywhere provided the bandwidth restrictions were met.

The next technical change would be to remove the baud limitations leaving only the bandwidth limits. Modern data communications tools that use DSP modems or software can push reliable data at far

higher than 300 baud still staying in the RTTY or phone bandwidth. For example for HF the emissions regulation says that "Only a RTTY or data emission using a specified digital code listed in § 97.309(a) of this part may be transmitted. The symbol rate must not exceed 300 bauds, or for frequency-shift keying, the frequency shift between mark and space must not exceed 1 kHz." A 45 baud RTTY signal with a frequency shift of 1 KHz is a bit wider than 1.1 KHz. Data modes limited to 1000 hertz occupied bandwidth without the 300 baud limit would allow technical solutions to be used and allow advances in methods to be encouraged. Similarly if data were to be allowed in the phone segment then limiting the data to 3 KHz or less would provide even more robust communications. In Fairfax County we have found that HF NVIS communications is sometimes the only way to handle communications to the ends of the county. Being able to stay on one net frequency, say in the current "phone" segment then switch to data modes like MT63 or Olivia at up to 2000 hertz wide would work very well. Staying within the SSB normal voice grade channel works well.

One possible addition step to consider would be to add restrictions on the use of semi-automatic modes. Having an operator on both ends of a circuit allows better avoidance of interference and allows better management of handling traffic.

1f. The existing FEMA training helps amateur radio operators understand the context of our volunteer service. Training from local governments helps in the context training. In addition technical training from other amateur radio operators and from the ARRL is very beneficial. I do not think this needs to be enhanced just do not take it away.

I also recommend against national training standards for amateur radio emergency communications response. This is being well done locally today

1g. What communications capabilities, e.g., voice, video, or data, are available from Amateur Radio Service operators during emergencies and disasters?

This is hard to answer given the huge depth and breadth of the current amateur radio capability. I would focus on simple voice or CW nets for tactical information supplemented along with the many existing digital communications for record traffic. An example is the use of the Narrow Band Emergency Messaging System (NBEMS) (<http://www.w1hkj.com/>) where the author has combined applications for message handling with sound card digital modes others have developed with the resulting set of free, multi-operating system applications available for all. Fairfax County VA ARES has standardized on this suite along with the use of EasyPal

(http://www.vk3evl.com/index.php?option=com_content&view=article&id=46&Itemid=53) for image transmission. NBEMS and EasyPal can operate on the same laptop without difficulty for mixed mode nets.

If the FCC relaxed mode restrictions to just bandwidth future technical innovations that might further improve the Amateur Radio Service would likely come quickly.

1h. Defacto international standards of data transmission already exist so do not impose them from above. PSK31, RTTY, Olivia, MT63, EasyPal are widely used by amateurs around the world and the USA so are standards. As said earlier baud limitations on top of mode limitations are the constraining factor. If we were limited by bandwidth, say 500 hertz, and 3000 hertz as examples, higher speed robust modes would follow quickly. If we retained bandwidth limits and did not allow automatic or semi-automatic stations removing these restrictions would cause no problems. We as a whole have shown we can self-regulate within our regulations.

1i. The best interconnection between amateur radio emergency communications and public safety land mobile systems is a human operator at the EOC or incident site with tools like WebEOC to insert and extract message traffic. People at EOCs, home stations with WebEOC access, incident sites and shelters are the best interconnection method.

1j. Do not mandate national certification programs to standardize amateur radio emergency communications training, mobilization, and operations. Existing amateur radio practice and training for local and state served agencies already work and are supplemented by ARRL training programs

2a. I have encountered restrictions on what I could put up when we looked for a vacation and retirement home near Flagstaff Arizona. I was very lucky to be able to talk to the development owner and show him what a wire antenna would look like from his house. He agreed to modify my deed for wire antennas. In our home in Vienna, Virginia, we are lucky to only have state and county zoning rules that do allow antenna structures up to 75 ft tall. I do not use that but instead have wire antennas out in the back yard trees. Talking to other members of my local club my situation is fairly unique. Other hams that live just down the street have restrictions and have faced outright harassment even when complying with their local association rules. The effect are stations with limited communications capability when they might have been a good distributed communications resource. The FCC could take the action to say that amateur radio stations and outdoor antennas of all sorts are a vital resource for disaster communications and recovery from the local to the national level.

2b. Private land use restrictions that are not simply good safe engineering practiced based are discriminatory. Engineering criteria based on wind, earthquakes, soil strength, materials strengths and the like are easy to deal with. Restrictions similar to “it looks ugly” make no sense when the antenna is simply built to accommodate the physics of launching or picking up an electromagnetic wave. Wire antennas in higher density area above houses supported by masts or trees do not destroy historic significance. In lower density areas even tower mounted antennas would not seem to be a historic significance problem. One only has to look at the early years of broadcasting and listening to see huge antennas being erected.

2c. It is hard right now to minimize the risk that an antenna installation will encounter unreasonable or unnecessary private land use restrictions given how large areas have no homes or apartments without such rules in place. Also placing antennas on commercial property that is not ones apartment building is usually hard given it is not near their home. And in a disaster the internet or microwave links for remote operation may simply be gone.

2d. Commission rules do not go far enough to remove impediments to enhanced Amateur Radio Service communications as they do not forbid local and private restrictions on the installation of antennas. One does not need a massive tower mounted antenna for local and regional emergency communications. However restrictions in some areas go so far as to forbid any “transmitting antennas” outside of houses. These restrictions make it impossible for an amateur radio operator to have simple and satisfying experiences in local and regional communications leading I believe to frequent abandonment of the hobby. Also practice in stringing up wire antennas is good for when the amateur has to put up temporary antennas after a natural or manmade disaster.

2e. I believe I answered this above.

2f. The enhancement opportunity is to allow more amateur radio stations to be put into place by the commission restricting the ability of local associations to limit such installations outside simple good engineering practice. Congress could provide the authority if it is not already given to the FCC.

Thank you for the opportunity to comment.